[illegible] high, Monte Cachirulo, Dept. [illegible], [illegible], Apr. [illegible], J. D. S. (Ex Pl. cit. 1644).

[illegible].—About 2 in. high, aphyllous: inflorescence [illegible], twice forcate, peduncles ½–1 in. long, semi-amplexicaul bracts with rounded lobes at base: perianth-segments with twice longer appendages 3–4 lines long: styles pubescent, subterminal, capillary, deflexed, shorter than obtuse carpels of ovary; stigma oblique; fruit obovate, puberulous.—*T. diaphana* Mers., one-third as large, with cauline leaves, sheathing entire bracts, less developed inflorescence, [illegible] by carpels elongated into terminal subulate styles.—On decayed trunks of trees, Pansamalá forest, [illegible], [illegible], Turckheim (Ex Pl. cit. 1384).

[illegible], described as new, Bot. Gaz., XV. [illegible], must be referred to *Aspidium ascendens* Hew., which in view of the distinctly uniform insulacre of the present specimens may be better designated as *Nephrodium ascendens*. It has been known hitherto only from Jamaica.

Baltimore, Md.

On certain new or peculiar North American Hyphomycetes. I.

Oedocephalum, Rhopalomyces and Sigmoidromyces n. g.

[illegible]

[illegible]

The species included in the above genera, although the similarity in their general type of fructification may justify their association for convenience as imperfect forms, must be considered as representatives of several widely different groups of so-called perfect fungi. Although in the plant subsequently described as a new genus there is at present no indication of any definite relationship to some higher form, there exists in the case of Rhopalomyces a probable connection with the *Zygomycetes*, as has been suggested by Van Tieghem,[1] while [illegible], a somewhat heterogeneous

[1] [illegible]

collection of species, we must accept the studies of Vuillemin and Brefeld as proving a connection both with the Discomycetes and the Basidiomycetes. The first named author[1] in his cultures of a Peziza, which he calls *Aleuria asterigma* has clearly established its connection with an Oedocephalum (*O. fimetarium* Riess) found growing in company with it and also developed directly from germinating ascospores. Brefeld,[2] on the other hand, in cultivating the basidiospores of *Polyporus annosus*, in nutrient solutions, has obtained from them a hyphomycetous fungus which, although it is compared to Aspergillus in the text, and is subject to unusual variations when artificially cultivated, is in all essentials an Oedocephalum, and not referable to any other described genus.

No such proof of the connection of Rhopalomyces with the Zygomycetes has as yet been obtained; but its Syncephalis-like habit and mode of growth, together with the occurrence of supposed acroconidia, which have been observed by Van Tieghem and are similar to those which accompany the species of Syncephalis and Mortierella, give force to this supposition.

Costantin,[3] in his excellent synopsis of the simple Mucedines and elsewhere,[4] first clearly distinguished Rhopalomyces from Oedocephalum, restricting the former genus to a small number of species all characterized by the extreme differentiation existing between the fertile and the sterile hyphae; the almost complete absence of septa, and the large dark-colored conidia. The presence of areolations upon the surface of the fertile head was formerly considered as distinctive of Rhopalomyces, and this definition is adhered to by Saccardo in the Sylloge,[5] although the same character is, as was pointed out by Harz in his well known paper,[6] distinctly present in so typical a species as *Oedocephalum glomerulosum*. It may be mentioned that the last named author recognized neither Oedocephalum nor Rhopalomyces as distinct genera, referring both to *Haplotrichum* Lk. emended to receive them: an error

[1] Sur le Polymorphism des Pezizes: Ass. Franc. p. l'Avan. d. Sci., Congres d. Nancy, 1886.

[2] Untersuchungen, VIII Heft, Basidiomyceten III, p. 169, Taf. X, XI.

[3] Les Mucedinees Simples. Materiaux p. l'Histoire d. Champignons. (Paris, 1888) Vol. II., p. 37.

[4] Bull. d. l. Soc. Bot. d. France, 1886, p. 492.

[5] Sylloge Fungorum, Vol. IV., p. 50.

[6] Einige Neue Hyphomyceten Berlin's und Wien's p 120, Plate I, fig. 1 c. d.

which becomes manifest in the light of a more extended knowledge of existing forms.

In enumerating the American species of these two genera, the writer has therefore restricted Rhopalomyces as above defined, referring to Oedocephalum those species which are characterized by the presence of fertile hyphae nearly approaching the sterile in size or at least not supplied with rhizoid-like basal outgrowths for support, and as a rule, distinctly septate.

The forms at present recorded from this country appear to be confined to two species, *Rhopalomyces cucurbitarum* Rav. and *R. cervinus* Cke. In Europe, however, the number described is considerable, although the identification of many of them is beset by the difficulties which are usually associated with wretched figures, or diagnoses without measurements or mention of allied species for purposes of comparison. Since it is often somewhat difficult to form any opinion concerning them from the description alone, a brief synopsis of all described forms is here appended, which may perhaps be found of value in this connection:

Oedocephalum Preuss.

OEDOCEPHALUM GLOMERULOSUM (Bull.) Sacc. Plate IV, fig. 1.

Oedocephalum glomerulosum Saccardo, Sylloge Fungorum, Vol. IV., p. 47. Costantin: Les Mucedinees Simples, p. 39, fig. 6. Berlese, Fungi Moricoli, III., N. 2, fig. 1–5.

Mucor glomerulosus Bulliard: Herbier d. l. France, Pl. 504, fig. 3.

Haplotrichum glomerulosum Harz: Einige Neue Hyphomyceten Berlin's und Wien's, p. 120, Taf. 1, fig. 1. Saccardo: Fungi Italici, Pl. 804.

Haplotrichum roseum Corda: Prachtflora, p. 23, Taf. XI. Icones Fung. II., Taf. 2, fig. 28.

Varying in color from nearly white to rose colored or yellowish. Sterile hyphae creeping, much branched and septate, about 6μ in diam. Fertile hyphae erect, solitary, tapering slightly upwards, septate, 8–9μ in diam. 200–350μ in height. Sporiferous heads spherical to obovoid, 35–50×25–45μ; average 30×38μ; often distinctly areolate. Spores oblong to obovoid, slightly pointed at the base and broader at the distal end, 9×18μ, maximum 10×30μ.

On old paper, decaying vegetable matter, dung of various animals. Massachusetts, Connecticut.

This species occurs very commonly on a great variety of substrata and is often troublesome in laboratory cultures.

completely occupying them to the exclusion of other and perhaps more desirable fungi. It varies from a decided rose or flesh color, which it often imparts to the substratum on which it grows, to pale whitish or yellowish: the color depending, in part at least, upon the amount of light to which it is exposed, and to the character of the substratum. The simple fertile hyphae also vary greatly in length and in the number of the septa, which may be almost wholly wanting. The areolation of the heads is distinct or otherwise, according to their condition of maturity, as well as to the illumination used in examining them.

In view of the observations of Vuillemin in connection with his *Aleuria asterigma* already referred to, it may be of interest to note that in several cultures made by the writer, that had been allowed to run for several weeks, there appeared repeatedly at various points on the old paper on which the fungus grew luxuriantly, a number of small Pezizae, flesh colored or whitish, about six millimeters in diameter and apparently developed from the same mycelium which gave rise to the Oedocephalum. Although asci were produced, no ascospores matured in them, so that cultures were impossible and no proof of the connection between the two forms was obtainable.

Saccardo in the Sylloge follows Harz in considering *O. elegans* Preuss a synonym of this species. The description and figure of *elegans*, however, which is given in Sturm, seem to indicate that the two are quite distinct: Preuss' species resembling *O. pallidum* (B. & Br.) in many respects. Whether Harz is correct in assuming that the present species is synonymous also with *O. album* and *O. alienum* of Preuss must remain uncertain, since these two species are hardly recognizable from either the figures or descriptions. The spherical spores described by Preuss, however, seem to separate both from *glomerulosum*, and Saccardo is doubtless right in keeping them distinct.

The *Oedocephalum roseum* Cooke, judging by the description and figure in Grevillea, can hardly be separated from the present species, of which it may be merely a short-stemmed variety.

Oedocephalum echinulatum n. sp.—Plate IV, figs. 8–11.

White becoming slightly yellowish. Sterile and fertile hyphae not clearly differentiated, the latter more or less irregularly and indefinitely branched. Fertile heads nearly

spherical to obovoid, very variable in size, more or less distinctly areolate: maximum $45 \times 65\mu$: average $28 \times 35\mu$. Spores oval to elliptical, finely echinulate: average $10 \times 12\mu$; maximum $18 \times 25\mu$.

On cheese and cheesy paper. Massachusetts.

This species, which made its appearance in company with several Mucors on a laboratory culture, is readily distinguished by its finely echinulate spores and very irregular growth. It resembles *O. dichotomum* Preuss in the successive branching of the fertile hyphae; but the type is not dichotomous, new heads usually arising by an out-growth from a point below the last head formed as in fig. 8. In some of its irregularities it approaches the conidial form of *Heterobasidion annosum* Bref. previously referred to, especially in the common occurrence of compound proliferation from the fertile heads, either before or after they have produced spores; each proliferation in its turn producing a smaller head and smaller spores as in fig. 9.

Oedocephalum verticillatum n. sp.—Plate IV, figs. 12–14.

White, becoming faintly yellowish. Sterile hyphae creeping, frequently septate, sub-verticillately branched. Fertile hyphae arising in whorls of from one to five; septate; 4μ in diam., tapering very slightly before swelling suddenly into the sporiferous head. Head invariably spherical; very faintly areolate; $20–25\mu$ in diam. Spores muriculate, spherical, slightly irregular in outline, $5–7\mu$ in diam.

On newt's dung. E. Tennessee.

This delicate species covers the substance on which it grows with an extremely evanescent mycelium; the hyphae running from one projecting point of the substratum to another and producing the fertile branches in the interval. The latter, therefore, arising in whorls in a usually vertical plane, are not always erect, some pointing downwards or outwards as well as upwards. The species does not appear nearly related to any of the described forms, from all of which it is readily separated by its verticillate habit and spherical muriculate spores.

OEDOCEPHALUM PALLIDUM (B. & Br.) Cost., Plate IV, figs. 2–7.

Oedocephalum pallidum Costantin Bull. Bot. Soc. d. France, Vol. XXXIII, p. 492.

Rhopalomyces pallidus Berkeley & Broome, Annals and Mag. of Nat. Hist., 2d Ser., Vol. VII, p. 96, No. 504, Plate V, fig. 2.

Rhopalomyces candidus Berkeley & Broome, l. c. p., 96, No. 505, Pl. V, fig. 3.

Haplotrichum fimetarium Riess in Fresenius Beitr. z. Mycol., III, p. 105, Taf. XIII, figs. 59–65.

Oedocephalum fimetarium Saccardo, Sylloge Fung., IV, p. 48.

Rhopalomyces cervinus Cooke, Grevillea, Vol. XII, p. 27. Ravenel, Fung. Amer., 574. Ellis N. A. F., No. 658.

Aleuria asterigma Vuillemin Ass. Franc. p. l'Avan. d. Sci. Congrès d. Nancy, Aug. 1886, Vol. XV. Pl. X.

Clear white, becoming brownish yellow to fawn-colored. Sterile hyphae creeping, septate: fertile hyphae erect, simple or once dichotomously branched. Fertile heads nearly spherical to obovoid, more or less distinctly areolate, 20–30μ in diameter. Spores oval or elliptical, sometimes slightly roughened toward the apex, 6–10×4–16μ.

On old paper, decaying wood, dung of various animals, etc. Mass., Conn., N. Carolina, Europe.

This species occurs very commonly on laboratory cultures as well as old paper in refuse heaps. In one instance only I have found it covering the under side of a charred and decaying log in shady woods, with its fawn-colored fructification. The form on dung which corresponds to the *Haplotrichum fimetarium* of Riess, is usually smaller than the others, as far as I have observed, the spores not often reaching the length (10.7μ) given by Fresenius; and usually measuring about 8μ or less.

The synonymy of the species is somewhat confused, yet that given above is I believe correct. Through the kindness of Mr. Massee, to whom I am greatly indebted for sketches, with measurements of the types of *Rhopalomyces pallidus* and *candidus* B. & Br., the identity of these two supposed species is established beyond question, *R. candidus* having been based upon the different appearance which distinguishes immature from the mature individuals of *R. pallidus*. Again, *Haplotrichum fimetarium* Riess is separated by Fresenius from *R. pallidus* merely on the ground that its head showed no areolation. Since, however, this character is quite unreliable, being distinct or invisible, according to the condition of the head when examined, it cannot possibly be considered as a valid reason for keeping the two distinct. As a matter of fact the heads of the form on dung are often distinctly areolate. As Costantin has pointed out[1], the conidial form associ-

[1] Les Mucedinees Simples, p. 39.

ated with Vuillemin's "*Aleuria asterigma*" must also be added to the list. *Rhopalomyces cervinus* Cooke, as distributed in Ellis N. A. Fungi, No. 658, by Ravenel, and therefore presumably authentic, is identical with the common form on dung, and the diagnosis in Grevillea also mentions no point of difference. Whether *O. elegans* Preuss may not be the same, must necessarily remain in doubt, although the figures and description in Sturm's Flora apply quite well to the present species, and are sufficiently definite at least to distinguish it with certainty from *O. glomerulosum*.

Rhopalomyces CORDA.

RHOPALOMYCES ELEGANS Corda.—Plate III, figs. 1–2.

Rhopalomyces elegans Corda Prachtflora, p. 3, Taf. 2. Anleit. z. Stud. d. Mycol. p. LXVI, Taf. B. 20, figs. 1–3. Fresenius Beiträge z. Mycol. I, p. 19, Taf. III, figs. 9–15. Bonorden Handbuch d. Allg. Mycol, p. 113, Taf. IX, fig. 184.

Haplotrichum elegans Harz: Einige neue Hyph. Berl. u. Wien's p. 118, Taf. V, fig. 5.

Sterile hyphae creeping, much branched, very rarely septate, 3–4 μ in diam. Fertile hyphae erect, more or less gregarious, colorless or slightly tinted, supported by rhizoids at the base which is usually slightly swollen, nearly cylindrical or tapering towards the apex, 1.5–0.75 mm. high, 18 μ in diam. Head nearly spherical, usually distinctly areolate, 50–80 μ in diam. Spores about 100 in number, dark-brown, ovoid to sub-cylindrical, slightly pointed at the base, 35–55 $\times$ 11–22μ.

On vegetable and animal matter of various kinds; bones, dung of animals, potatoes, squash rind, etc. Connecticut.

This well known species has occurred very frequently at New Haven on a variety of substances, although it is cultivated with difficulty, and I have been unable to induce the spores to germinate even in nutrient solutions. The spores vary considerably in size and shape and are usually nearly oval or long oval, seldom presenting the very elongate almost cylindrical form figured by Corda.

The supposed acroconidia described by Van Tieghem and resembling the similar productions of Morthierella and Syncephalis I have never seen.

RHOPALOMYCES CUCURBITARUM Berk. & Rav.

Rhopalomyces cucurbitarum Berkeley & Ravenel, Grevillea, Vol. III, p. 109.

"Hyalinus; floccis inarticulatis; capitulis globosis echinulatis: sporis obovatis ovatisque."

On putrid squashes, Lower Carolina.

The exhaustive diagnosis above quoted has led to some uncertainty concerning this form, which, however appears to be a true Rhopalomyces and probably a distinct species.

Mr. Massee has kindly sent me a sketch from Berkeley's type with measurements which show that it is perhaps too closely allied to *R. elegans*, differing chiefly in its much smaller size. The creeping mycelium consists of the usual fine aseptate hyphae, from which the large, erect, fertile hyphae arise. The spores are represented as reddish brown, ovoid, slightly pointed at the base, and the head as spherical. The following measurements are noted: fertile hyphae 170–200μ high by 10–12μ in diam.: head 40–50μ in diam.: spores 18–20 $\times$ 9–10μ. It will be observed that these measurements hardly come within the limit of variation which *R. elegans* may be supposed to exhibit, and it is therefore necessary to consider the species distinct until more information concerning it can be obtained.

Rhopalomyces strangulatus n. sp.—Plate III, figs. 3–9.

Sterile hyphae copious, much branched and rarely septate, 4μ in diam. Fertile hyphae densely gregarious, supported by numerous rhizoids, pure white, cylindrical, 2–8 mm. high, (average 7.5 mm.) by 40–50μ in diam., suddenly constricted below the head with which it is connected by a narrow neck 8μ in diam. Head perfectly spherical, more or less distinctly areolate, beset with very numerous projections; average diam. 250μ. Spores, several hundred in number, subcylindrical; rounded at both ends, average dimensions 39 $\times$ 8.5–10μ.

On old bones and other decaying animal matter.—Massachusetts, Connecticut.

This remarkable species, which is the prince of its kind and one of the most beautiful of the Hyphomycetes seems to be not uncommon about New Haven, growing with great luxuriance on old bones, etc. in woods, appearing after rains in patches of considerable size, at first sight not unlike a vigorous growth of some large Mucor. A few specimens of the same species once followed a culture of Basidiobolus on frogs dung in Cambridge: but, like *R. elegans*, I have been unable to cultivate it on a large scale except on substrata where its mycelium was already growing, and all sowing and attempted cultures of its spores in water or in nutrient solutions have failed entirely.

The *R. nigripes* of Constantin which occurs upon *Peziza arenaria* approaches it in bearing a large number of spores: but is at once distinguished by its smaller size, dark color and by the absence of the peculiar constriction below the head present in our species.

Sigmoideomyces n. gen.

Fertile hyhae erect. septate, growing in sigmoid curves, intricately branched, the main branches subdichotomous or falsely dichotomous, the ultimate branches sterile. Spores solitary, thick walled, borne on the surface of spherical heads. Heads borne at the apex of short lateral branches which arise from opposite sides of certain cells in the continuity of the hyphae.

Sigmoideomyces dispiroides n. sp.—Plate IV, figs. 15–18.

Fertile hyphae forming brownish yellow tufts about 1 mm. high, coherent through the interlocking of the numerous curved branches, the main axis (and its principal branches) growing in a more or less regular succession of sigmoid curves, giving off the main branches from the convex side of each curve, the cell which bears the branch also producing a short, nearly cylindrical, lateral outgrowth from either side, in a plane at right angles to that of the branch. Each of these outgrowths is septate near its base and apex and terminated by a perfectly spherical head. Ultimate branches curved and sterile, sometimes greatly elongated, giving rise to a succession of still smaller curved sterile branches from their convex sides. Heads 38μ (35–45μ) in diameter. Spores broadly elliptical to nearly spherical, yellowish, finely echinulate, 16×17μ.

On rotten wood. Burbank, E. Tennessee.

A single specimen of this peculiar plant was collected at Burbank on the under side of a moist log on which it produced a few scattered tufts of varying size. The fungus had reached maturity, and owing to the fact that it separates with great readiness at the septa, it was impossible to determine whether the fertile hyphae were produced from a few fine filaments which could be seen running upon the wood at the base of some of the specimens examined, or whether the sterile hyphae had wholly disappeared. The heads also break off when mature, even while the spores are still *in situ*, carrying with them the last cell of the short stalk which bears them. A certain number of the ultimate sterile branches are contin-

ued into sometimes greatly elongated simple septate filaments which may be seen with a hand lens projecting here and there beyond the general surface of the tuft.

The genus bears much the same relation to Oedocephalum that Dispira bears to Aspergillus, and the somewhat similar type of growth and branching seen in VanTieghem's species has suggested the specific name.

SYNOPSIS OF THE DESCRIBED SPECIES OF OEDOCEPHALUM AND RHOPALOMYCES.

Oedocephalum albidum Saccardo: Michelia, II., p. 288, (*sub* Haplotrichum), Fungi Italici, plate 805. The hyphæ of this species are described as hyaline and figured as brownish; fertile simple, rarely branched. Spores spherical or broadly elliptical, 7–10μ in diam., yellowish. On roots of lemon.

O. album Preuss: Fung. Hoyersw., No. 108: Sturm's Flora, Taf. 63. This is referred to *O. glomerulosum* by Harz, but is figured with round spores. Otherwise the description and plate furnish no clue to its identity.

O. alienum Preuss: l. c., No. 109, l. c. Taf. 63. This species is said to be distinguished from the preceding by the fact that the head lacks the warts and furrows present in *O. album*. The spores are also figured as spherical and the species is otherwise equally unrecognizable.

O. aurantiacum Cooke: Grevillea, vol. V, p. 147. Forms orange colored orbicular patches. Hyphæ short, fasciculate, septate, hyaline, above spherical and papillate. Spores spherical, orange-colored, smooth, (no measurements). On leaves of forest trees, India.

O. badium Von Müggenberg; Myc. Beiter., in Verhand. d. k. k. zool. bot. Gesell. in Wien, 1874. The heads of this species are said to produce longish cells, which are covered with muricate brown spores $7 \times 10\mu$. It is therefore not an Oedocephalum.

O. byssinum Saccardo: Sylloge, IV., p. 49. Bonorden Abhand. a. d. Geb. d. Mycol. II., p. 95, Taf. 1, fig. 12, *sub* Periconia. Karsten Symb. a. Myc. Fenn., 1888, XXVI, 4. p. 49, subspecies *herbariorum*. Hyphæ hyaline, hardly septate. Spores spherical. Karsten's sub-species has spores perfectly spherical, verruculose 12–14μ in diam. Fertile hyphæ 2 mm. $\times$ 15 – 20μ. Heads becoming yellowish. The type seems very near *O. albidum* Sacc. from the description. On decaying leaves.

O. crystallinum Cesati. This is said by Saccardo to be described on "p. 299" of the Botan. Zeitung, and figured in Hedwigia, 1, Taf. IV. fig. 3. I have not seen the original description. On Taf. IV, Vol. II, of Hedwigia fig. 3 represents an Oedocephalum which might be *O. glomerulosum*, but it is too coarse and ill-drawn to give any idea of its identity. A tedious search in the accompanying text shows no reference to it. According to Saccardo, the spores are hyaline, oblong, ovoid, becoming subochraceous. On Sporidesmium: distributed in in Klotsch, Herb. Viv. Myc., 1974.

O. dichotomum Preuss: Fungi Hoyersw. No. 271. This is peculiar for its successively dichotomous branches, which terminate in a head bearing brownish, finely muriculate globoso-ellipsoid spores. On Polyporus flavus.

O. fimetarium Riess: see above sub *O. pallidum* (B. & Br.) Cost.

O. glomerulosum (Bulliard) Saccardo: see above.

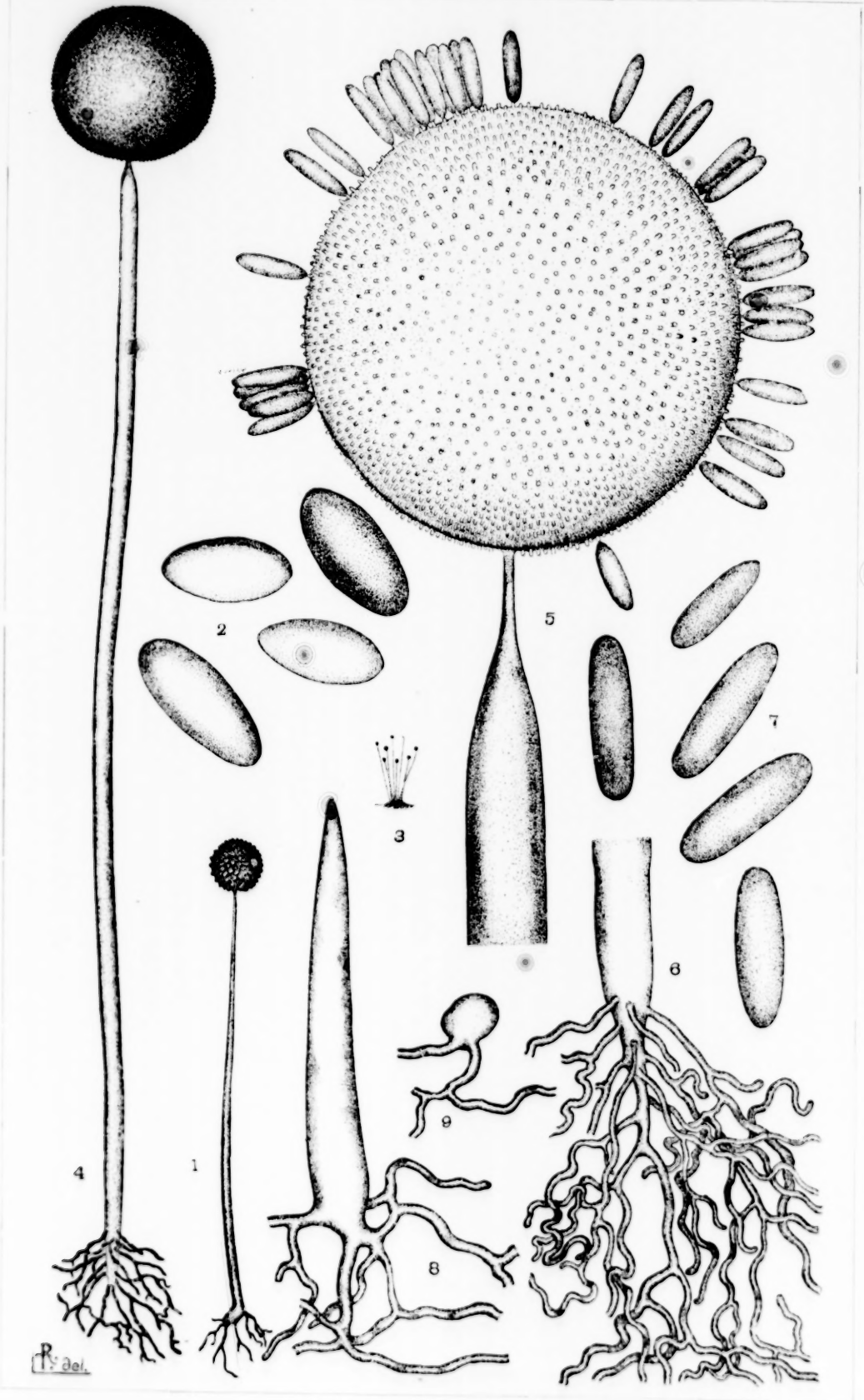
O. hyalinum Saccardo: Sylloge IV, p. 49, Bonorden, Abh. a. d. Geb. d. Mycol. II, p. 95, Taf. I, fig. 11, *sub* Periconia. Hyphae colorless, hardly septate. Head yellowish. Conidia small, spherical, hyaline. On decayed leaves. This seems too near *O. albidum* Sacc. and *O. byssinum* (Bon.).

O. laeticolor Berkeley & Broome: Ann. & Mag. of Nat. Hist., May, 1865, 3d Ser., Vol. XV, p. 403, Pl. XIV, fig. 12. Brick red. Fertile hyphae simple. Spores figured as elliptical and verrucose; described as spherical, granular, 15–20μ long, with a basal appendage. On cow dung. The figures are coarse and indefinite, but the species seems quite distinct.

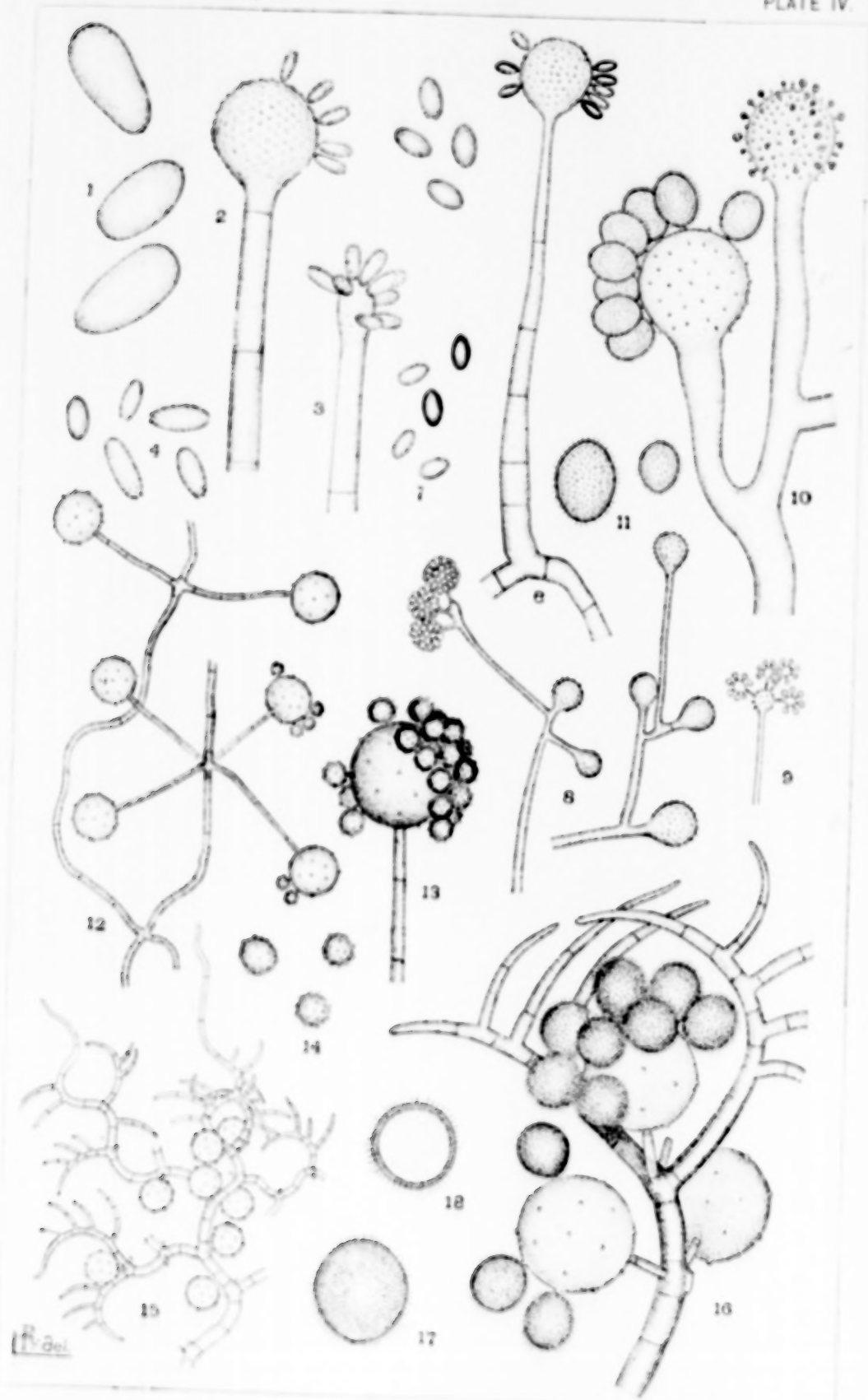
O. pyriforme Saccardo: Sylloge, p. 49, Bonorden Handl. d. Allg. Mycol., p. 113, Taf. IX., fig. 196, *sub* Periconia. The hyphae of this species are described as aseptate. The spores are spherical or oval (figured as echinulate or verruculose) slightly blackish, hyaline. The head is grey green, and the whole plant in gross appearance resembles Penicillium glaucum. On Polyporus flavus.

O. Preussii Saccardo: Sylloge, Vol. IV., p. 49, Preuss, Fung. Hoyersw., No. 104, *sub* Periconia alba. Hyphæ white, septate. Spores subglobose, smooth. This species can hardly be identified from the description. On decaying leaves.

O. roseum Cooke: Grevillea, Vol. I, p. 184, ibid Vol. II., Pl. 22, fig. 8. "Rose pink, effused, or in minute punctiform



THAXTER on HYPHOMYCETES.



THAXTER on HYPHOMYCETES.

tufts collected together in irregular patches. Threads equal. Head subglobose: spores ovate or oval, smooth, attached by a slight apiculus. Cooke, Exs., No. 550. On old paper and rags." The description and figure corresponds closely with some varieties of *O. glomerulosum*.

O. sulphureum Cooke & Massee: Grevillea, Vol. XVII, p. 3. "Tufts hemispherical or confluent, sulphur colored. Threads septate, dichotomous, globosely capitulate at the apex, papillate, conidia globose, hyaline (3–5μ diam). Epispore smooth. On rope."

Rhopalomyces candidus Berkeley & Broome: see above sub *Oedocephalum pallidum* (B. & Br.) Cost.

R. cervinus Cooke: see above sub *Oed. pallidum* (B. & Br.)

R. cucurbitarum Berkeley & Ravenel: see above.

R. elegans Corda: see above.

R. nigripes Costantin: Bull d. l. Soc. Bot. d. France, 1886 p. 442. Les Mucéd. Simples, p. 37, fig 5.

Head and fertile hyphæ brown. Head 28–30μ in diam. Spores brown, elongate, rounded at one extremity, pointed at the other. 25–34 × 8–9μ. On Peziza arenaria.

R. pallidus Berkeley & Broome: see above sub *Oedocephalum pallidum*.

The writer desires to express his indebtedness to the kindness of Mr. Massee in communicating notes on Berkeley's types, as well as to Prof. Farlow, for the privilege of examining several of the works consulted.

New Haven, October, 1890.

EXPLANATION OF PLATE III.

Rhopalomyces elegans Corda.

Fig. 1. Single fertile hypha with rhizoids ×68. Fig. 2. Four spores ×464.

Rhopalomyces strangulatus, n. s.

Fig. 3. Fertile hyphæ natural size (as reduced.) Fig. 4. Fertile hypha ×68. Fig. 5. Fertile head mostly denuded of spores ×232. Fig. 6. Base of fertile hypha showing rhizoids ×232. Fig. 7. Five spores ×464. Figs. 8–9. Early stages in formation of fertile hyphæ ×232.

EXPLANATION OF PLATE IV.

Oedocephalum glomerulosum (Bull.) Sacc.

Fig. 1. Three spores ×696.

Oedocephalum pallidum (B. & Br.) Cost.

Fig. 2. Fertile head of form on dead wood ×464. Fig. 3. Abnormal spore production at apex of fertile hypha ×464. Fig. 4. Five spores of form on dead wood ×696. Fig. 5. Four spores of form on paper ×696. Fig. 6. Fertile hypha of form on horse dung (*O. fenestarium* Kiess) × 464. Fig. 7. Five spores of form on horse dung ×696.

[illegible], n. s.

Fig. 9. Portion of fertile frond showing [illegible]. Fig. 10. Fertile frond proliferating to form [illegible]. Fig. 11. Two fertile fronds, one [illegible]. Fig. 12. Two spores [illegible].

[illegible], n. s.

Fig. 13. Sterile and fertile fronds, showing [illegible]. Fig. 14. Single frond [illegible]. Fig. 15. Three spores [illegible].

[illegible]

Fig. 16. Fragment taken from a fertile [illegible] showing [illegible] fertile fronds denuded of spores where they have not fallen [illegible]. Fig. 17. Fragment bearing two pairs of fertile fronds, one of which has fallen off [illegible]. Fig. 18. Spore [illegible]. Fig. 19. Spore in optical section [illegible].

New Grasses.

GEO. VASEY.

Sporobolus pilosus, n. sp.—Perennial, from thick roots; whole plant pale green; culms cespitose, rigid, erect, about 1½ ft. high, leafy, particularly at the base, mostly simple, sheaths smooth, the uppermost sheathing the base of the panicle, the lower crowded and flattened; ligule inconspicuous; the throat, margin and both sides of the lower blades pilose, the upper ones involute and attenuated to a long point, shorter than the culm; panicle terminal, spike-like, 2 to 3 inches long, close, the lower part included in the sheath; spikelets 2½ lines long, smooth, the lower empty glume ⅓ shorter than the upper, which equals the fl. gl. and palet, all obtuse.—Resembles S. asper, which has the leaves longer than the culm, both empty glumes shorter than the flower, and the leaves smooth or not pilose. Collected in Kansas, by B. B. Smyth.

Bouteloua uniflora, n. sp.—Perennial; culms 12 to 16 inches high, slender; culm leaves 4, the upper sheathing the base of the panicle, 1 line wide, the lower 2 to 4 inches long, rigid, becoming involute; ligule a ring of short hairs; panicle racemose-spicate, about 4 inches long, with 30 to 40 spikes, which are about 4 lines long, and but one flowered; lower empty glume linear-oblong, hardly half as long as the upper, which is between 3 and 4 lines long, acuminate, conduplicate, entire and scabrous on the midrib; flowering glume about